

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A magnetic transducer comprising:
a nonmagnetic layer having a pair of facing surfaces;
a soft magnetic layer formed on one surface of the nonmagnetic layer;
a ferromagnetic layer formed on the other surfaces of the nonmagnetic layer;
an antiferromagnetic layer formed on the ferromagnetic layer on the side opposite to the nonmagnetic layer;
a soft magnetic interlayer formed in the soft magnetic layer; and
a ferromagnetic interlayer formed in the ferromagnetic layer,
wherein the soft magnetic interlayer having magnetism and electrical resistance higher than the electrical resistance of the soft magnetic layer, the ferromagnetic interlayer having magnetism and electrical resistance higher than the electrical resistance of the ferromagnetic layer.
2. (Original) A magnetic transducer according to claim 1, wherein $0.2T_k \leq D_2 \leq 0.8T_k$, where T_k represents the thickness of the ferromagnetic layer and D_2 represents the distance between the nonmagnetic layer and the ferromagnetic interlayer.
3. (Original) A magnetic transducer according to claim 1, wherein the distance between the nonmagnetic layer and the ferromagnetic interlayer is from 0.6 nm to 3.6 nm inclusive.
4. (Original) A magnetic transducer according to claim 1, wherein the ferromagnetic interlayer contains at least one of oxide, nitride and nitride oxide.

5. (Original) A magnetic transducer according to claim 4, wherein the ferromagnetic interlayer contains at least cobalt in a group consisting of nickel, cobalt and iron and at least one kind of element in a group consisting of oxygen and nitrogen.

6. (Original) A magnetic transducer according to claim 1, wherein the thickness of the ferromagnetic interlayer is from 0.5 nm to 1.0 nm inclusive.

7-8. (Canceled)

9. (Currently Amended) ~~A magnetic transducer according to claim 7,~~ A magnetic transducer comprising:

a nonmagnetic layer having a pair of facing surfaces;
a soft magnetic layer formed on one surface of the nonmagnetic layer;
a ferromagnetic layer formed on the other surfaces of the nonmagnetic layer;
an antiferromagnetic layer formed on the ferromagnetic layer on the side opposite to the nonmagnetic layer; and
a ferromagnetic interlayer formed in the ferromagnetic layer, the ferromagnetic interlayer having magnetism and electrical resistance higher than the electrical resistance of the ferromagnetic layer, wherein and the ferromagnetic interlayer containscontaining at least one of oxide, nitride and nitride oxide,
wherein $0.2T_k \leq D_2 \leq 0.8T_k$, where T_k represents the thickness of the ferromagnetic layer and D_2 represents the distance between the nonmagnetic layer and the ferromagnetic interlayer.

10. (Original) A magnetic transducer according to claim 9, wherein the ferromagnetic interlayer contains at least cobalt in a group consisting of nickel, cobalt and iron and at least one kind of element in a group consisting of oxygen and nitrogen.

11. (Currently Amended) A magnetic transducer according to ~~claim 7~~claim 9, wherein the soft magnetic layer has

a first soft magnetic layer containing at least nickel in a group consisting of nickel, cobalt, iron, tantalum, chromium, rhodium, molybdenum and niobium; and

a second soft magnetic layer containing at least cobalt in a group consisting of nickel, cobalt and iron.

12. (Currently Amended) A magnetic transducer according to ~~claim 7~~claim 9, wherein the antiferromagnetic layer contains at least one kind of element in a group consisting of platinum, ruthenium, rhodium, palladium, nickel, gold, silver, copper, iridium, chromium and iron and manganese.

13. (Currently Amended) A magnetic transducer according to ~~claim 7~~claim 9, wherein the nonmagnetic layer contains at least one kind of element in a group consisting of copper, gold and silver.

14. (Currently Amended) ~~A magnetic transducer according to claim 7, A~~
magnetic transducer comprising:

a nonmagnetic layer having a pair of facing surfaces;

a soft magnetic layer formed on one surface of the nonmagnetic layer;

a ferromagnetic layer formed on the other surfaces of the nonmagnetic layer;

an antiferromagnetic layer formed on the ferromagnetic layer on the side opposite to the nonmagnetic layer; and

a ferromagnetic interlayer formed in the ferromagnetic layer, the ferromagnetic interlayer having magnetism and electrical resistance higher than the electrical resistance of the ferromagnetic layer,

wherein $0.2T_k \leq D_2 \leq 0.8T_k$, where T_k represents the thickness of the ferromagnetic layer and D_2 represents the distance between the nonmagnetic layer and the ferromagnetic interlayer, wherein and the thickness of the ferromagnetic interlayer is from 0.5 nm to 1 nm inclusive.

15-16. (Canceled)

17. (Currently Amended) ~~A magnetic transducer according to claim 15,~~ A magnetic transducer comprising:
_____ a nonmagnetic layer having a pair of facing surfaces;
_____ a soft magnetic layer formed on one surface of the nonmagnetic layer;
_____ a ferromagnetic layer formed on the other surfaces of the nonmagnetic layer;
_____ an antiferromagnetic layer formed on the ferromagnetic layer on the side
opposite to the nonmagnetic layer; and
_____ a ferromagnetic interlayer formed in the ferromagnetic layer, the ferromagnetic
layer having magnetism and electrical resistance higher than the electrical resistance of the
ferromagnetic layer, wherein and the ferromagnetic interlayer containscontaining at least one
of oxide, nitride and nitride oxide,
_____ wherein the distance between the nonmagnetic layer and the ferromagnetic
interlayer is from 0.6 nm to 3.6 nm inclusive.

18. (Original) A magnetic transducer according to claim 17, wherein the ferromagnetic interlayer contains at least cobalt in a group consisting of nickel, cobalt and iron and at least one kind of element in a group consisting of oxygen and nitrogen.

19. (Currently Amended) A magnetic transducer according to ~~claim 15~~ claim 17, wherein the soft magnetic layer has

a first soft magnetic layer containing at least nickel in a group consisting of nickel (Ni), cobalt (Co), iron (Fe), tantalum (Ta), chromium (Cr), rhodium (Rb), molybdenum (Mo) and niobium (Nb); and

a second soft magnetic layer containing at least cobalt in a group consisting of nickel, cobalt and iron.

20. (Currently Amended) A magnetic transducer according to ~~claim 15~~claim 17, wherein the antiferromagnetic layer contains at least one kind of element in a group consisting of platinum, ruthenium, rhodium, palladium, nickel, gold, silver, copper, iridium, chromium and iron and manganese.

21. (Currently Amended) A magnetic transducer according to ~~claim 15~~claim 17, wherein the nonmagnetic layer contains at least one kind of element in a group consisting of copper, gold and silver.

22. (Currently Amended) ~~A magnetic transducer according to claim 15,~~ A magnetic transducer comprising:

a nonmagnetic layer having a pair of facing surfaces;
a soft magnetic layer formed on one surface of the nonmagnetic layer;
a ferromagnetic layer formed on the other surfaces of the nonmagnetic layer;
an antiferromagnetic layer formed on the ferromagnetic layer on the side opposite to the nonmagnetic layer; and
a ferromagnetic interlayer formed in the ferromagnetic layer, the ferromagnetic layer having magnetism and electrical resistance higher than the electrical resistance of the ferromagnetic layer,
wherein the distance between the nonmagnetic layer and the ferromagnetic interlayer is from 0.6 nm to 3.6 nm inclusive, wherein and the thickness of the ferromagnetic interlayer is from 0.5 nm to 1 nm inclusive.

23 (Canceled)

24. (Currently Amended) ~~A thin film magnetic head according to claim 23,~~ A thin film magnetic head having a magnetic transducer,

the magnetic transducer comprising:
a nonmagnetic layer having a pair of facing surfaces;

a soft magnetic layer formed on one surface of the nonmagnetic layer;
a ferromagnetic layer formed on the other surface of the nonmagnetic layer;
an antiferromagnetic layer formed on the ferromagnetic layer on the side
opposite to the nonmagnetic layer; and
a ferromagnetic interlayer formed in the ferromagnetic layer, the ferromagnetic
interlayer having magnetism and electrical resistance higher than the electrical resistance of
the ferromagnetic layer, wherein and the ferromagnetic interlayer contains/containing at least
one of oxide, nitride and nitride oxide,
wherein $0.2T_k \leq D_2 \leq 0.8T_k$, where T_k represents the thickness of the
ferromagnetic layer and D_2 represents the distance between the nonmagnetic layer and the
ferromagnetic layer.

25. (Canceled)

26. (Currently Amended) ~~A thin film magnetic head according to claim 25,~~ A thin
film magnetic head having a magnetic transducer,

the magnetic transducer including:
a nonmagnetic layer having a pair of facing surfaces;
a soft magnetic layer formed on one surface of the nonmagnetic layer;
a ferromagnetic layer formed on the other surface of the nonmagnetic layer;
an antiferromagnetic layer formed on the ferromagnetic layer on the side
opposite to the nonmagnetic layer; and
a ferromagnetic interlayer formed in the ferromagnetic layer, the ferromagnetic
interlayer having magnetism and electrical resistance higher than the electrical resistance of
the ferromagnetic layer, wherein and the ferromagnetic interlayer contains/containing at least
one of oxide, nitride and nitride oxide,

wherein the distance between the nonmagnetic layer and the ferromagnetic interlayer is from 0.6 nm to 3.6 nm inclusive.